BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

Figure 1

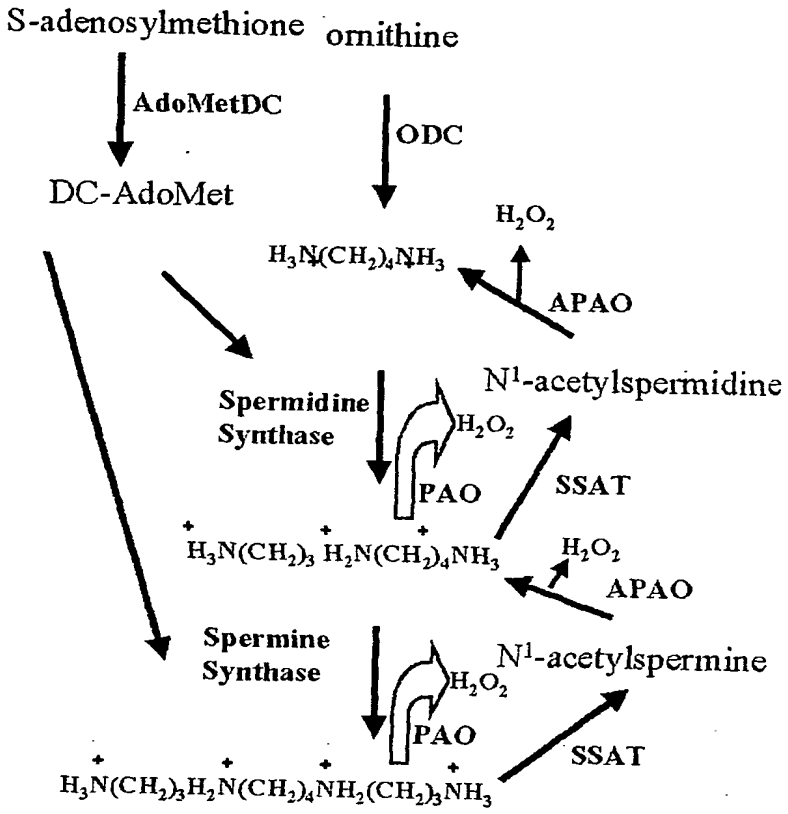

S-adenosylmethione
ornithine
AdoMetDC
ODC
DC-AdoMet
H_2O_2
$H_3N(CH_2)_4NH_3$
APAO
N^1-acetylspermidine
Spermidine Synthase
H_2O_2
PAO
SSAT
$H_3N(CH_2)_3$ $H_2N(CH_2)_4NH_3$
H_2O_2
APAO
Spermine Synthase
N^1-acetylspermine
H_2O_2
PAO
SSAT
$H_3N(CH_2)_3H_2N(CH_2)_4NH_2(CH_2)_3NH_3$

Figure 2 A-C

A

```
     CGCCGCTCGCCGCAGACTTACTTCCCCGGCTCAGCAGGGAAAGGTTCCTAGAAGGTGAGCGCGGACGGT   69

     ATGCAAAGTTGTGAATCCAGTGGTGACAGTGCGGATGACCCTCTCAGTCGCGGCCTACGGAGAAGGGGA   138
1     M  Q  S  C  E  S  S  G  D  S  A  D  D  P  L  S  R  G  L  R  R  R  G
     CAGCCTCGTGTGGTGGTGATCGGCGCCGGCTTGGCTGGCCTGGCTGCAGCCAAAGCACTTCTTGAGCAG   207
24    Q  P  R  V  V  V  I  G  A  G  L  A  G  L  A  A  A  K  A  L  L  E  Q
     GGTTTCACGGATGTCACTGTGCTTGAGGCTTCCAGCCACATCGGAGGCCGTGTGCAGAGTGTGAAACTT   276
47    G  F  T  D  V  T  V  L  E  A  S  S  H  I  G  G  R  V  Q  S  V  K  L
     GGACACGCCACCTTTGAGCTGGGAGCCACCTGGATCCATGGCTCCCATGGGAACCCTATCTATCATCTA   345
70    G  H  A  T  F  E  L  G  A  T  W  I  H  G  S  H  G  N  P  I  Y  H  L
     GCAGAAGCCAACGGCCTCCTGGAAGAGACAACCGATGGGGAACGCAGCGTGGGCCGCATCAGCCTCTAT   414
93    A  E  A  N  G  L  L  E  E  T  T  D  G  E  R  S  V  G  R  I  S  L  Y
     TCCAAGAATGGCGTGGCCTGCTACCTTACCAACCACGGCCGCAGGATCCCCAAGGACGTGGTTGAGGAA   483
116   S  K  N  G  V  A  C  Y  L  T  N  H  G  R  R  I  P  K  D  V  V  E  E
     TTCAGCGATTTATACAACGAGGTCTATAACTTGACCCAGGAGTTCTTCCGGCACGATAAACCAGTCAAT   552
139   F  S  D  L  Y  N  E  V  Y  N  L  T  Q  E  F  F  R  H  D  K  P  V  N
     GCTGAAAGTCAAAATAGCGTGGGGGTGTTCACCCGAGAGGAGGTGCGTAACCGCATCAGGAATGACCCT   621
162   A  E  S  Q  N  S  V  G  V  F  T  R  E  E  V  R  N  R  I  R  N  D  P
     GACGACCCAGAGGCTACCAAGCGCCTGAAGCTCGCCATGATCCAGCAGTACCTGAAGGTGGAGAGCTGT   690
185   D  D  P  E  A  T  K  R  L  K  L  A  M  I  Q  Q  Y  L  K  V  E  S  C
     GAGAGCAGCTCACACAGCATGGACGAGGTGTCCCTGAGCGCCTTCGGGGAGTGGACCGAGATCCCCGGC   759
208   E  S  S  S  H  S  M  D  E  V  S  L  S  A  F  G  E  W  T  E  I  P  G
     GCTCACCACATCATCCCCTCGGGCTTCATGCGGGTTGTGGAGCTGCTGGCGGAGGGCATCCCTGCCCAC   828
231   A  H  H  I  I  P  S  G  F  M  R  V  V  E  L  L  A  E  G  I  P  A  H
     GTCATCCAGCTAGGGAAACCTGTCCGCTGCATTCACTGGGACCAGGCCTCAGCCCGCCCCAGAGGCCCT   897
254   V  I  Q  L  G  K  P  V  R  C  I  H  W  D  Q  A  S  A  R  P  R  G  P
     GAGATTGAGCCCCGGGGTGAGGGCGACCACAATCACGACACTGGGGAGGGTGGCCAGGGTGGAGAGGAG   966
277   E  I  E  P  R  G  E  G  D  H  N  H  D  T  G  E  G  G  Q  G  G  E  E
     CCCCGGGGGGGCAGGTGGGATGAGGATGAGCAGTGGTCGGTGGTGGTGGAGTGCGAGGACCGTGAGCTG   1035
300   P  R  G  G  R  W  D  E  D  E  Q  W  S  V  V  V  E  C  E  D  R  E  L
     ATCCCGGCGGACCATGTGATTGTGACCGTGTCGCTAGGTGTGCTAAAGAGGCAGTACACCAGTTTCTTC   1104
323   I  P  A  D  H  V  I  V  T  V  S  L  G  V  L  K  R  Q  Y  T  S  F  F
     CGGCCAGGCCTGCCCACAGAGAAGGTGGCTGCCATCCACCGCCTGGGCATTGGCACCACCGACAAGATC   1173
346   R  P  G  L  P  T  E  K  V  A  A  I  H  R  L  G  I  G  T  T  D  K  I
     TTTCTGGAATTCGAGGACCCCTTCTGGCCGCCCTGAGTGCAACAGCCTACAGTTTGTGTGGGAGGACGAA   1242
369   F  L  E  F  E  E  P  F  W  G  P  E  C  N  S  L  Q  F  V  W  E  D  E
     GCGGAGAGCCACACCCTCACCTACCCACCTGAGCTCTGGTACCGCAAGATCTGCGGCTTTGATGTCCTC   1311
392   A  E  S  H  T  L  T  Y  P  P  E  L  W  Y  R  K  I  C  G  F  D  V  L
     TACCCGCCTGAGCGCTACGGCCATGTGCTGAGCGGCTGGATCTGCGGGGAGGAGGCCCTCGTCATGGAG   1380
415   Y  P  P  E  R  Y  G  H  V  L  S  G  W  I  C  G  E  E  A  L  V  M  E
     AAGTGTGATGACGAGGCAGTGGCCGAGATCTGCACGCAGATGCTGCGTCAGTTCACAGGGAACCCCAAC   1449
438   K  C  D  D  E  A  V  A  E  I  C  T  E  M  L  R  Q  F  T  G  N  P  N
     ATTCCAAAACCTCGGCGAATCTTGCGCTCGGCCTGGGGCAGCAACCCTTACTTCCGTGGCTCCTATTCA   1518
461   I  P  K  P  R  R  I  L  R  S  A  W  G  S  N  P  Y  F  R  G  S  Y  S
     TACACGCAGGTGGGCTCCAGCGGGGCGGATGTGGAGAAGCTGGCCAAGCCCCTGCCGTACACGGAGAGC   1587
484   Y  T  Q  V  G  S  S  G  A  D  V  E  K  L  A  K  P  L  P  Y  T  E  S
     TCAAAGACAGCGCCCATGCAGGTGCTGTTTTCCGGTGAGGCCACCCACCGCAAGTACTATTCCACCACC   1656
507   S  K  T  A  P  M  Q  V  L  F  S  G  E  A  T  H  R  K  Y  Y  S  T  T
     CACGGTGCTCTGCTGTCCGGCCAGCGTGAGGCTGCCCGCCTCATTGAGATGTACCGAGACCTCTTCCAG   1725
530   H  G  A  L  L  S  G  Q  R  E  A  A  R  L  I  E  M  Y  R  D  L  F  Q
     CAGGGGACCTGAGGGCTGTCCTCGCTGCTGAGAAGAGCCACTAACTCGTGACCTCCAGCCTGCCCCTTG   1794
552   Q  G  T
     CTGCCGTGTGCTCCTGCCTTCCTGATCCTCTGTAGAAAGGATTTTTATCTTCTGTAGAGCTAGCCGCCC   1863

     TGACTGCCTTCAGACCTGGCCCTGTAGCTTT                                        1894
```

B

C

Exon no.	Exon Size, bp	Sequence at exon-intron junction* 5`- splice donor	3` splice acceptor	Intron size, bp	Codons interrupted
1	>43	GGAAAG gtacgg-----	ctgcag GTTCCT	26052	
2	234	AACTTG gtaagt-----	cctcag GACACG	2087	Gly[70]
3	227	AACGAG gtaagg-----	tggcag GTCTAT	4225	Glu[145]-Val[146]
4	174	CTGAAG gtatct-----	ccgcag GTGGAG	112	Lys[103]-Val[104]
5	760	TCACAG gtgcgc-----	catcag GGAACC	645	Gly[457]
6	161	ACAGCG gtaagc-----	ccgcag CCCATG	3615	Ala[510]-Pro[511]
7	453				

Figure 3A-D

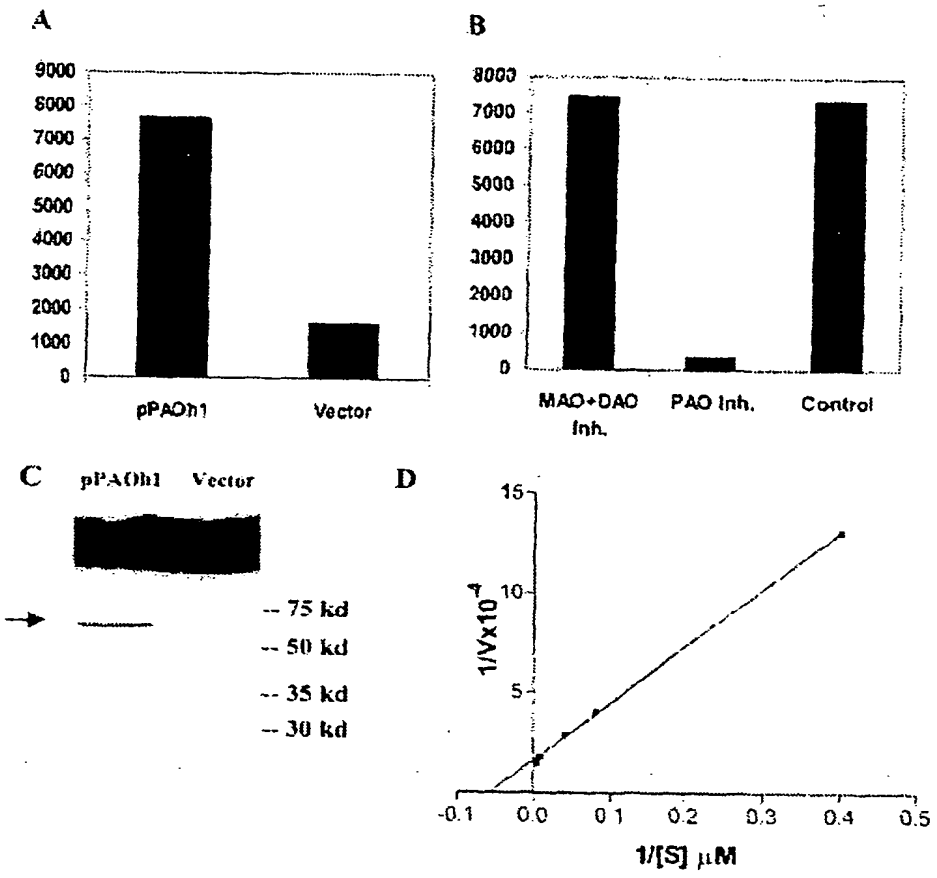
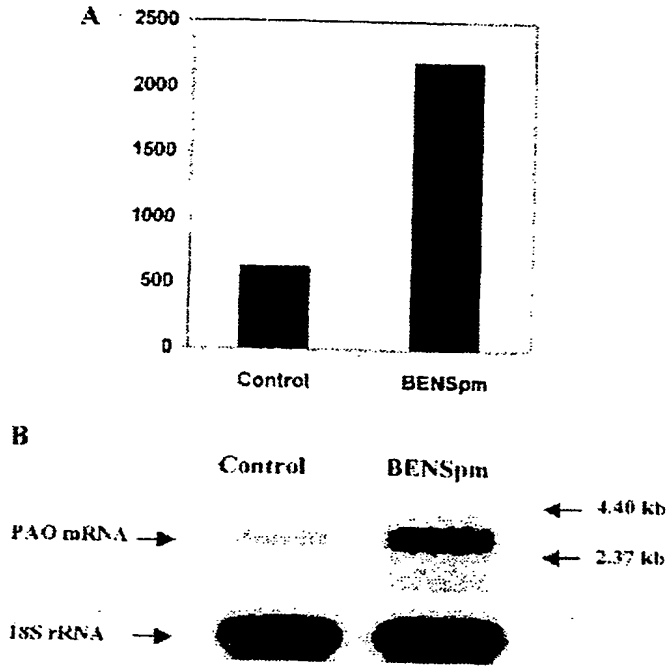

A
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
pPAOh1
Vector
B
8000
7000
6000
5000
4000
3000
2000
1000
0
MAO+DAO Inh.
PAO Inh.
Control
C
pPAOh1
Vector
-- 75 kd
-- 50 kd
-- 35 kd
-- 30 kd
D
15
10
5
1/Vx10^-4
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
1/[S] μM

Figure 4A and B



Figures A and B

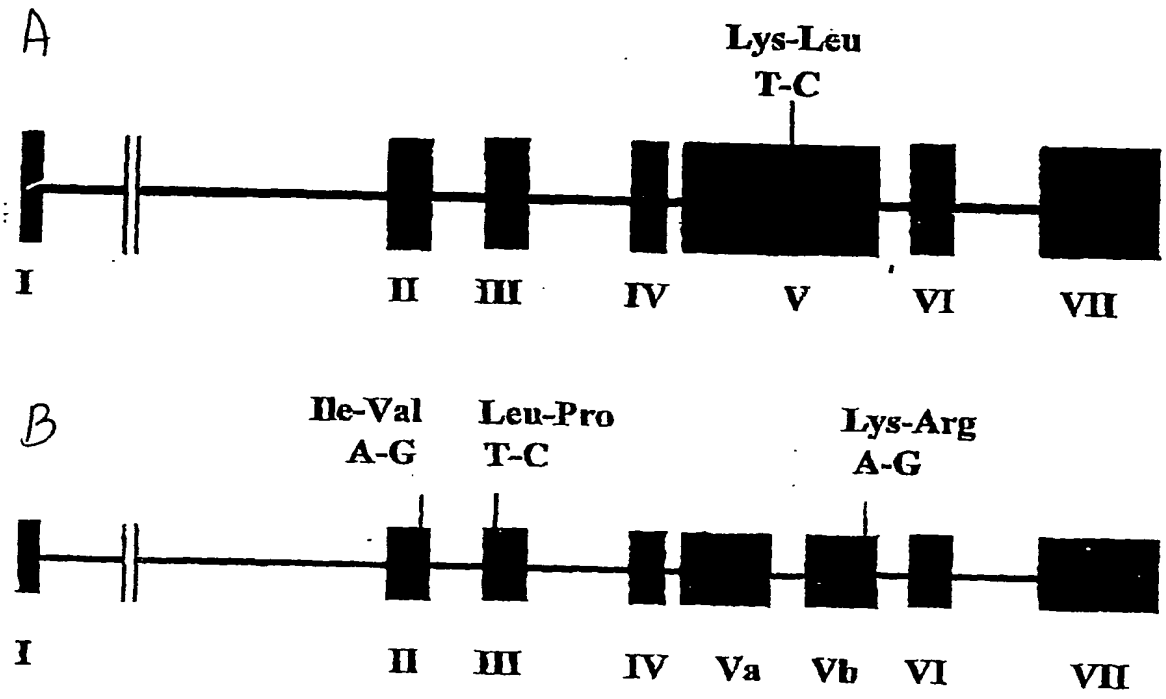


Figure 6 A and B

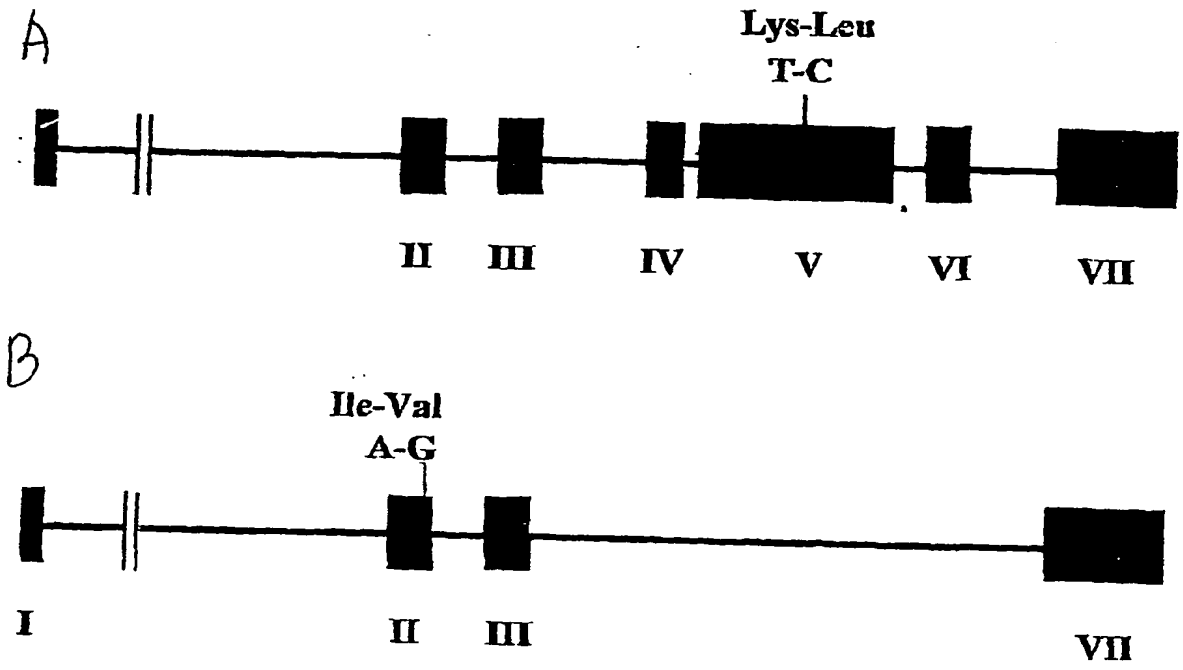


Figure 7 A and B

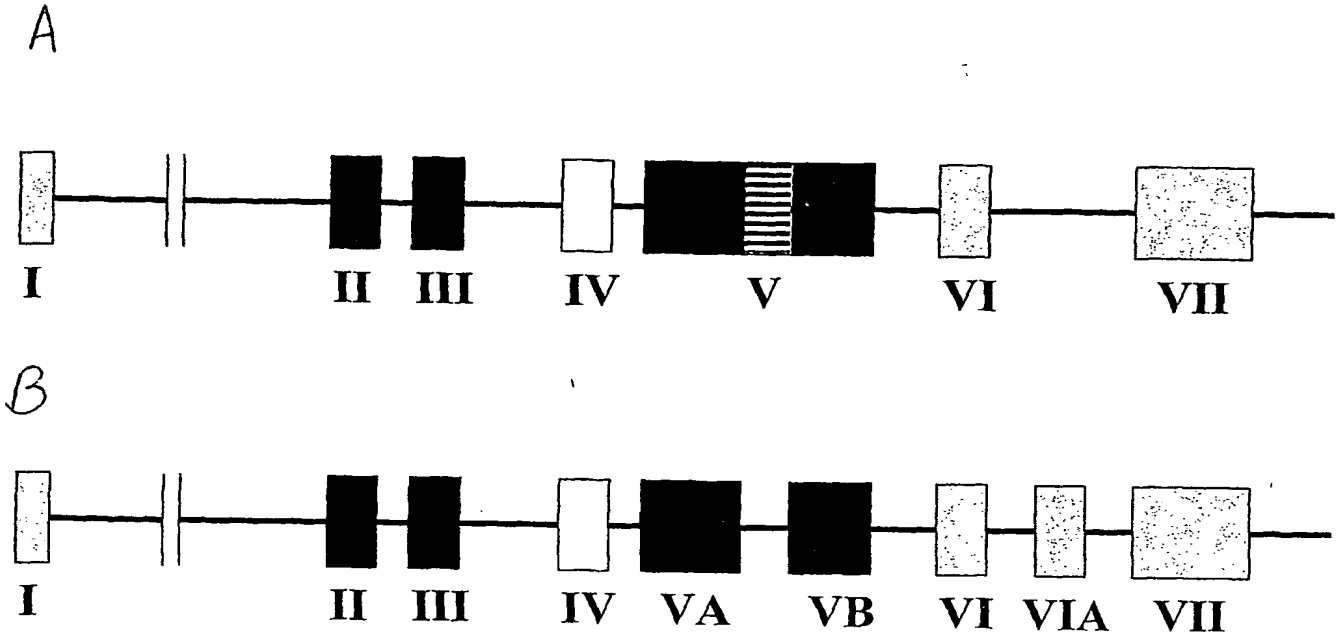


Figure 8A and B

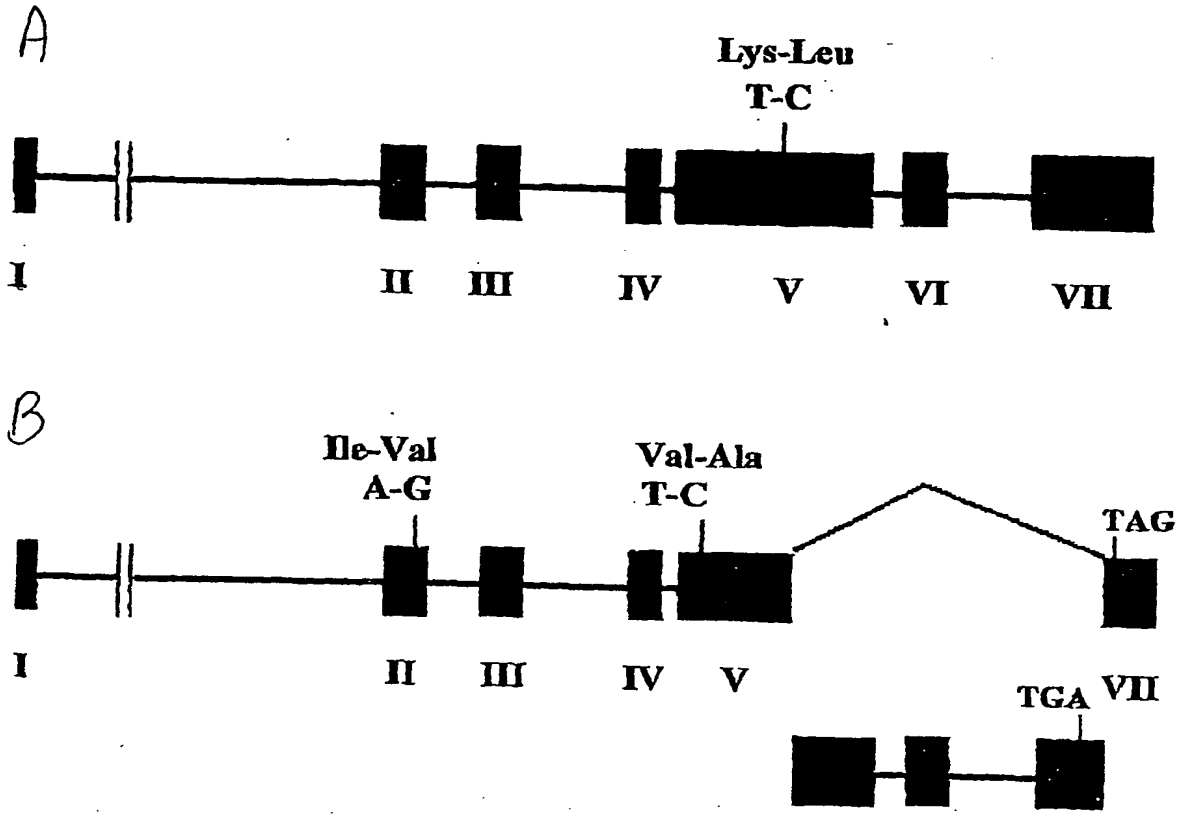


Figure 9 A and B

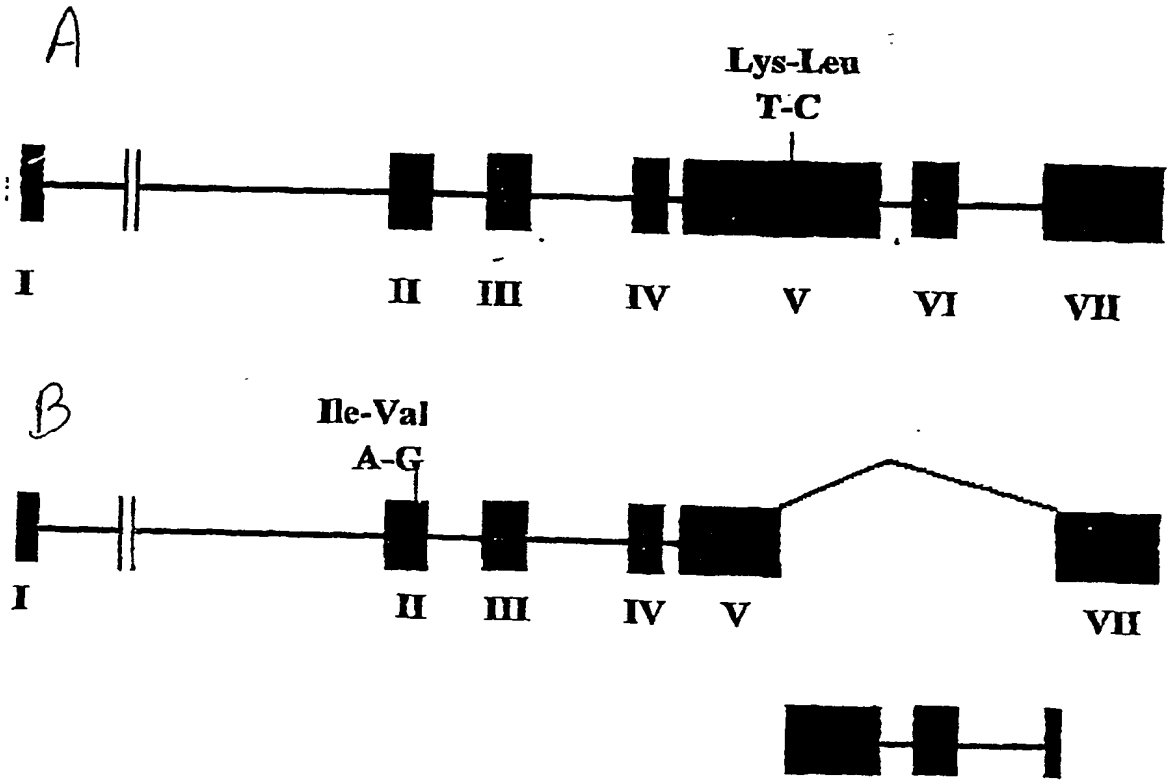


Figure 10A and B

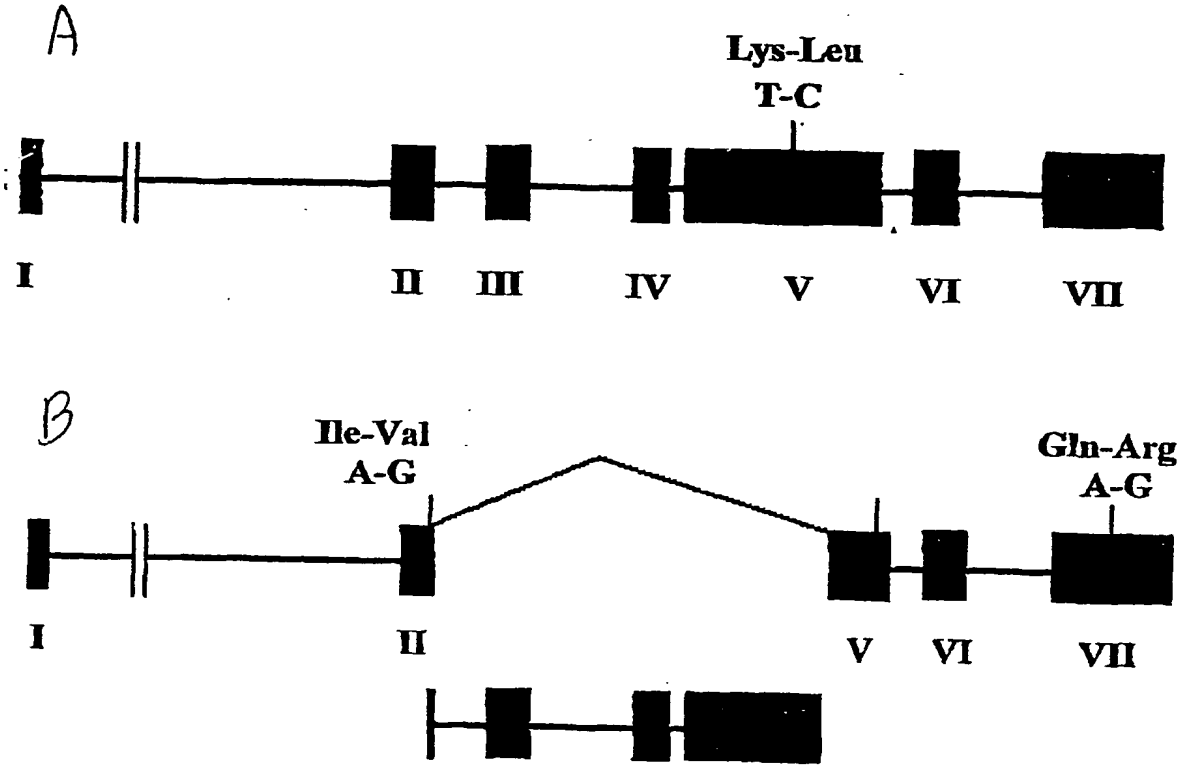
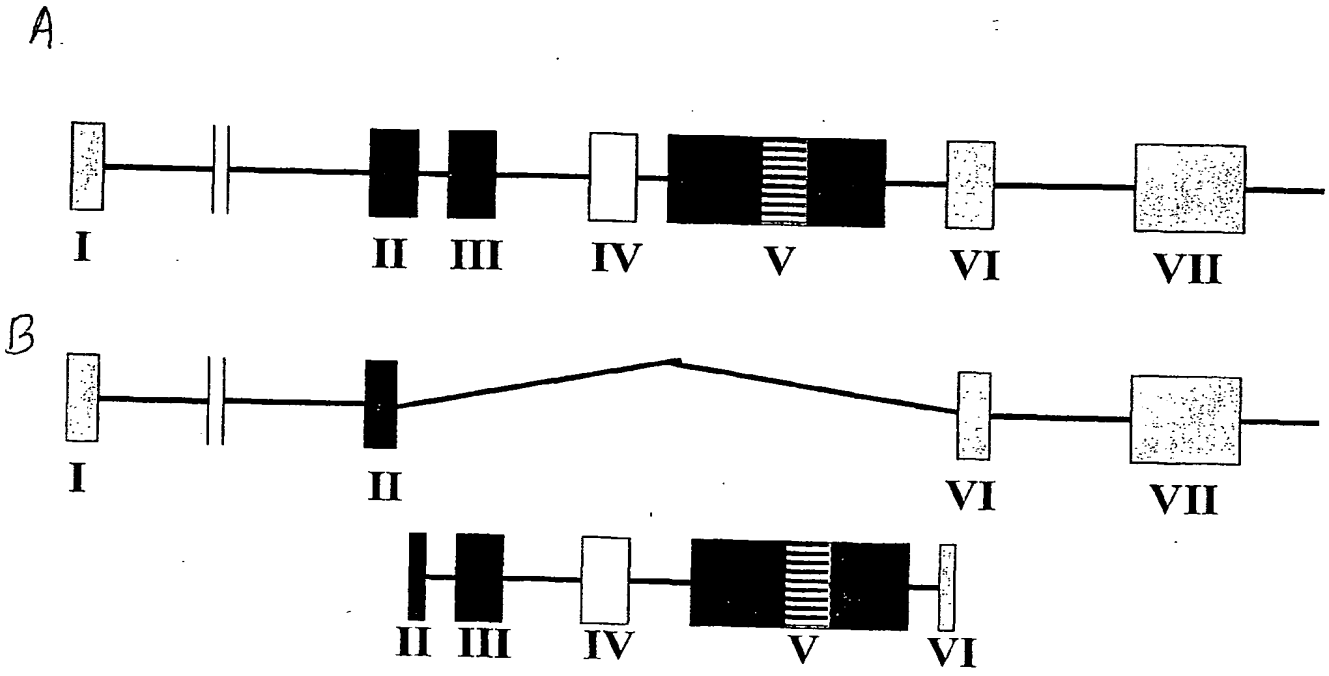


Figure 11 A and B



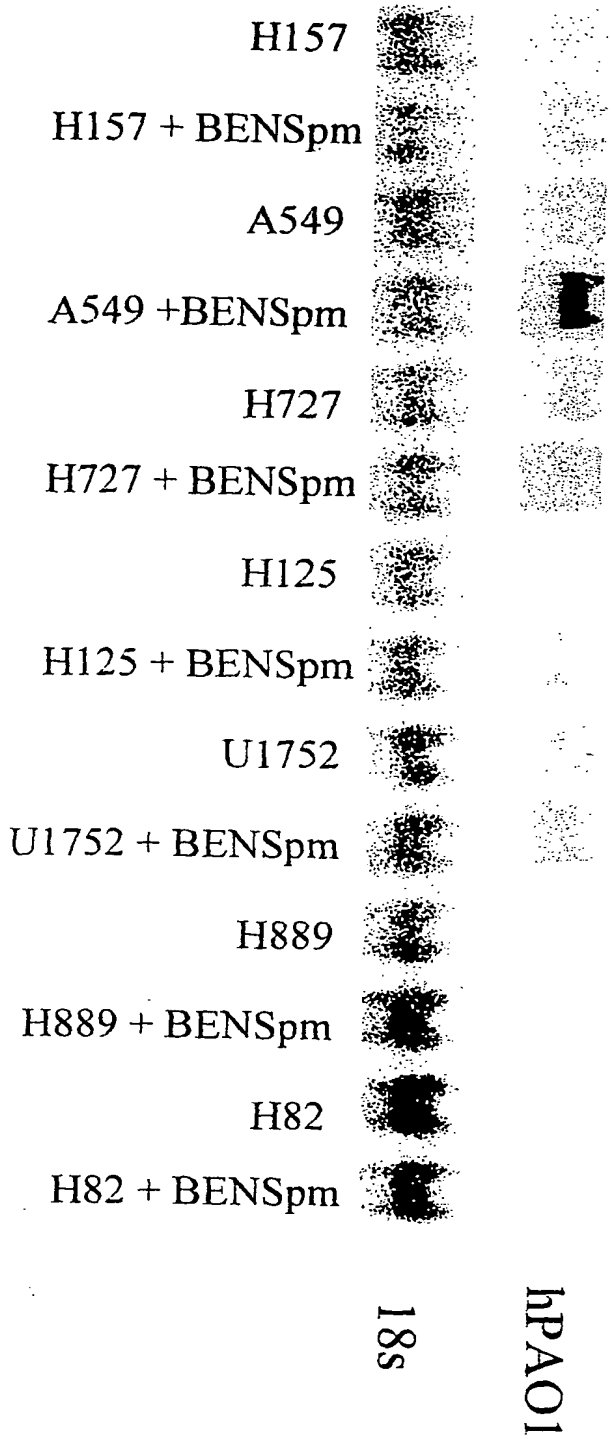

H157
H157 + BENSpm
A549
A549 +BENSpm
H727
H727 + BENSpm
H125
H125 + BENSpm
U1752
U1752 + BENSpm
H889
H889 + BENSpm
H82
H82 + BENSpm
18s
hPAO1

Figure 12

Figure 13

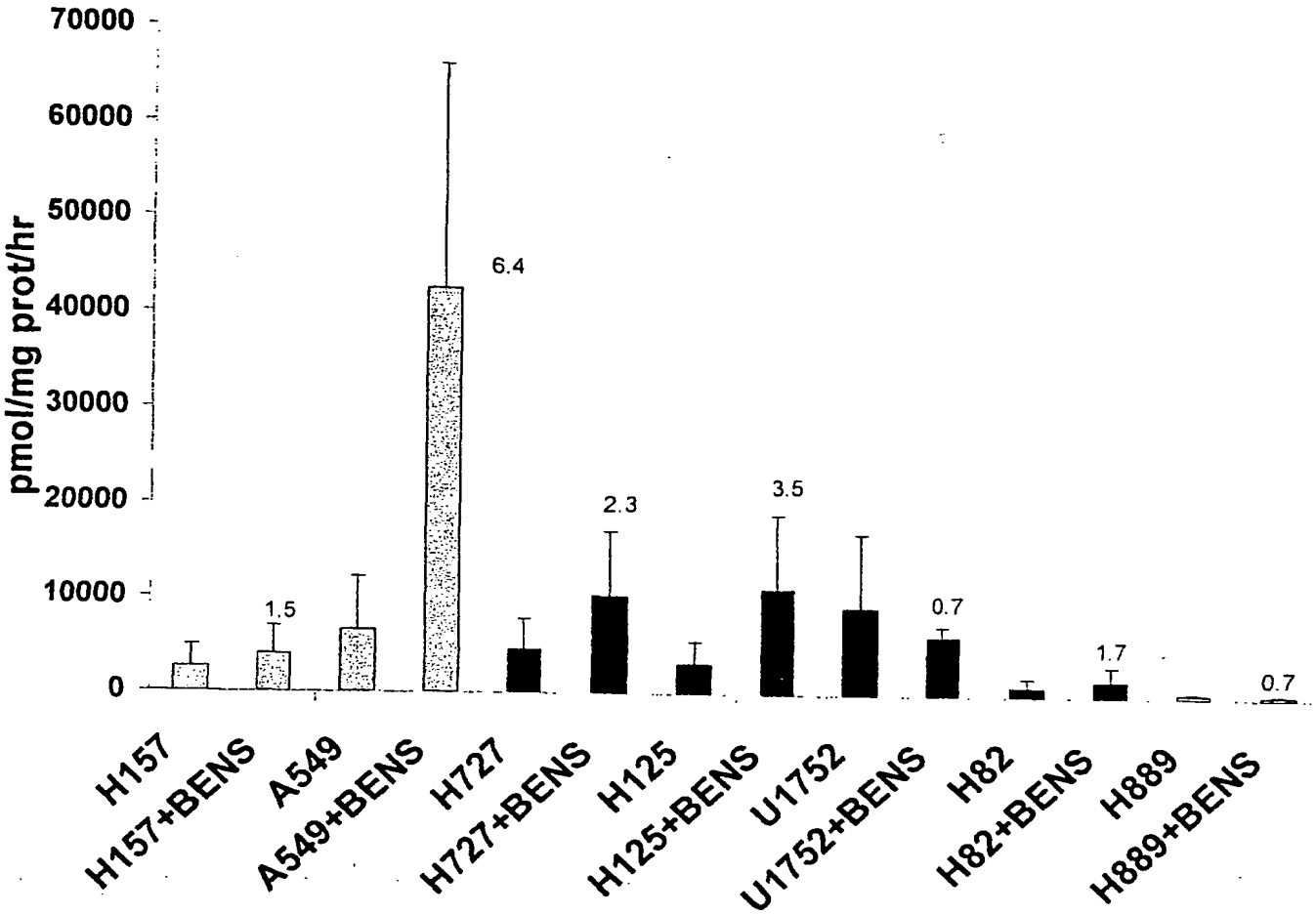

70000
60000
50000
40000
30000
20000
10000
0
pmol/mg prot/hr
1.5
6.4
2.3
3.5
0.7
1.7
0.7
H157
H157+BENS
A549
A549+BENS
H727
H727+BENS
H125
H125+BENS
U1752
U1752+BENS
H82
H82+BENS
H889
H889+BENS

Figure 14 A and B

A

```
          10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAAGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGACCC TCTCAGTCGC GGCCTACGGA GAAGGGGACA GCCTCGTGTG
 150 GTGGTGATCG GCGCCGGCTT GGCTGGCCTG GCTGCAGCCA AAGCACTTCT
 200 TGAGCAGGGT TTCACGGATG TCACTGTGCT TGAGGCTTCC AGCCACATCG
 250 GAGGCCGTGT GCAGAGTGTG AAACTTGGAC ACGCCACCTT TGAGCTGGGA
 300 GCCACCTGGA TCCATGGCTC CCATGGGAAC CCTATCTATC ATCTAGCAGA
 350 AGCCAACGGC CTCCTGGAAG AGACAACCGA TGGGGAACGC AGCGTGGGCC
 400 GCATCAGCCT CTATTCCAAG AATGGCGTGG CCTGCTACCT TACCAACCAC
 450 GGCCGCAGGA TCCCCAAGGA CGTGGTTGAG GAATTCAGCG ATTTATACAA
 500 CGAGGTCTAT AACTTGACCC AGGAGTTCTT CCGGCACGAT AAACCAGTCA
 550 ATGCTGAAAG TCAAAATAGC GTGGGGGTGT TCACCCGAGA GGAGGTGCGT
 600 AACCGCATCA GGAATGACCC TGACGACCCA GAGGCTACCA AGCGCCTGAA
 650 GCTCGCCATG ATCCAGCAGT ACCTGAAGGT GGAGAGCTGT GAGAGCAGCT
 700 CACACAGCAT GGACGAGGTG TCCCTGAGCG CCTTCGGGGA GTGGACCGAG
 750 ATCCCCGGCG CTCACCACAT CATCCCCTCG GGCTTCATGC GGGTTGTGGA
 800 GCTGCTGGCG GAGGGCATCC CTGCCCACGT CATCCAGCTA GGGAAACCTG
 850 TCCGCTGCAT TCACTGGGAC CAGGCCTCAG CCCGCCCCAG AGGCCCTGAG
 900 ATTGAGCCCC GGGGTGAGGG CGACCACAAT CACGACACTG GGGAGGGTGG
 950 CCAGGGTGGA GAGGAGCCCC GGGGGGGCAG GTGGGATGAG GATGAGCAGT
1000 GGTCGGTGGT GGTGGAGTGC GAGGACCGTG AGCTGATCCC GGCGGACCAT
1050 GTGATTGTGA CCGTGTCGCT AGGTGTGCTA AAGAGGCAGT ACACCAGTTT
1100 CTTCCGGCCA GGCCTGCCCA CAGAGAAGGT GGCTGCCATC CACCGCCTGG
1150 GCATTGGCAC CACCGACAAG ATCTTTCTGG AATTCGAGGA GCCCTTCTGG
1200 GGCCCTGAGT GCAACAGCCT ACAGTTTGTG TGGGAGGACG AAGCGGAGAG
1250 CCACACCCTC ACCTACCCAC CTGAGCTCTG GTACCGCAAG ATCTGCGGCT
1300 TTGATGTCCT CTACCCGCCT GAGCGCTACG GCCATGTGCT GAGCGGCTGG
1350 ATCTGCGGGG AGGAGGCCCT CGTCATGGAG AAGTGTGATG ACGAGGCAGT
1400 GGCCGAGATC TGCACGGAGA TGCTGCGTCA GTTCACAGGG AACCCCAACA
1450 TTCCAAAACC TCGGCGAATC TTGCGCTCGG CCTGGGGCAG CAACCCTTAC
1500 TTCCGTGGCT CCTATTCATA CACGCAGGTG GGCTCCAGCG GGGCGGATGT
1550 GGAGAAGCTG GCCAAGCCCC TGCCGTACAC GGAGAGCTCA AAGACAGCGC
1600 CCATGCAGGT GCTGTTTTCC GGTGAGGCCA CCCACCGCAA GTACTATTCC
1650 ACCACCCACG GTGCTCTGCT GTCCGGCCAG CGTGAGGCTG CCCGCCTCAT
1700 TGAGATGTAC CGAGACCTCT TCCAGCAGGG GACCTGAGGG CTGTCCTCGC
1750 TGCTGAGAAG AGCCACTAAC TCGTGACCTC CAGCCTGCCC CTTGCTGCCG
1800 TGTGCTCCTG CCTTCCTGAT CCTCTGTAGA AAGGATTTTT ATCTTCTGTA
1850 GAGCTAGCCG CCCTGACTGC CTTCAGACCT GGCCCTGTAG CTTT
```

B

```
          10         20         30         40         50
   0 MQSCESSGDS ADDPLSRGLR RRGQPRVVVI GAGLAGLAAA KALLEQGFTD
  50 VTVLEASSHI GGRVQSVKLG HATFELGATW IHGSHGNPIY HLAEANGLLE
 100 ETTDGERSVG RISLYSKNGV ACYLTNHGRR IPKDVVEEFS DLYNEVYNLT
 150 QEFFRHDKPV NAESQNSVGV FTREEVRNRI RNDPDDPEAT KRLKLAMIQQ
 200 YLKVESCESS SHSMDEVSLS AFGEWTEIPG AHHIIPSGFM RVVELLAEGI
 250 PAHVIQLGKP VRCIHWDQAS ARPRGPEIEP RGEGDHNHDT GEGGQGGEEP
 300 RGGRWDEDEQ WSVVVECEDR ELIPADHVIV TVSLGVLKRQ YTSFFRPGLP
 350 TEKVAAIHRL GIGTTDKIFL EFEEPFWGPE CNSLQFVWED EAESHTLTYP
 400 PELWYRKICG FDVLYPPERY GHVLSGWICG EEALVMEKCD DEAVAEICTE
 450 MLRQFTGNPN IPKPRRILRS AWGSNPYFRG SYSYTQVGSS GADVEKLAKP
 500 LPYTESSKTA PMQVLFSGEA THRKYYSTTH GALLSGQREA ARLIEMYRDL
 550 FQQGT
```

Figure 15A and B

A

```
           10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAAGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGACCC TCTCAGTCGC GGCCTACGGA GAAGGGGACA GCCTCGTGTG
 150 GTGGTGATCG GCGCCGGCTT GGCTGGCCTG GCTGCAGCCA AAGCACTTCT
 200 TGAGCAGGGT TTCACGGATG TCACTGTGCT TGAGGCTTCC AGCCACGTCG
 250 GAGGCCGTGT GCAGAGTGTG AAACTTGGAC ACGCCACCTT TGAGCCGGGA
 300 GCCACCTGGA TCCATGGCTC CCATGGGAAC CCTATCTATC ATCTAGCAGA
 350 AGCCAACGGC CTCCTGGAAG AGACAACCGA TGGGGAACGC AGCGTGGGCC
 400 GCATCAGCCT CTATTCCAAG AATGGCGTGG CCTGCTACCT TACCAACCAC
 450 GGCCGCAGGA TCCCCAAGGA CGTGGTTGAG GAATTCAGCG ATTTATACAA
 500 CGAGGTCTAT AACTTGACCC AGGAGTTCTT CCGGCACGAT AAACCAGTCA
 550 ATGCTGAAAG TCAAAATAGC GTGGGGGTGT TCACCCGAGA GGAGGTGCGT
 600 AACCGCATCA GGAATGACCC TGACGACCCA GAGGCTACCA AGCGCCTGAA
 650 GCTCGCCATG ATCCAGCAGT ACCTGAAGGT GGAGAGCTGT GAGAGCAGCT
 700 CACACAGCAT GGACGAGGTG TCCCTGAGCG CCTTCGGGGA GTGGACCGAG
 750 ATCCCCGGCG CTCACCACAT CATCCCCTCG GGCTTCATGC GGGTTGTGGA
 800 GCTGCTGGCG GAGGGCATCC CTGCCCACGT CATCCAGCTA GGGAAACCTG
 850 TCCGCTGCAT TCACTGGGAC CAGGCCTCAG CCCGCCCCAG AGGCCCTGAG
 900 ATTGAGCCCC GGGGTGTGCT AAAGAGGCAG TACACCAGTT TCTTCCGGCC
 950 AGGCCTGCCC ACAGAGAAGG TGGCTGCCAT CCACCGCCTG GGCATTGGCA
1000 CCACCGACAA GATCTTTCTG GAATTCGAGG AGCCCTTCTG GGGCCCTGAG
1050 TGCAACAGCC TACAGTTTGT GTGGGAGGAC GAAGCGGAGA GCCACACCCT
1100 CACCTACCCA CCTGAGCTCT GGTACCGCAA GATCTGCGGC TTTGATGTCC
1150 TCTACCCGCC TGAGCGCTAC GGCCATGTGC TGAGCGGCTG GATCTGCGGG
1200 GAGGAGGCCC TCGTCATGGA GAGGTGTGAT GACGAGGCAG TGGCCGAGAT
1250 CTGCACGGAG ATGCTGCGTC AGTTCACAGG GAACCCCAAC ATTCCAAAAC
1300 CTCGGCGAAT CTTGCGCTCG GCCTGGGGCA GCAACCCTTA CTTCCGCGGC
1350 TCCTATTCAT ACACGCAGGT GGGCTCCAGC GGGGCGGATG TGGAGAAGCT
1400 GGCCAAGCCC CTGCCGTACA CAGAGAGCTC AAAGACAGCG CCCATGCAGG
1450 TGCTGTTTTC CGGTGAGGCC ACCCACCGCA AGTACTATTC CACCACCCAC
1500 GGTGCTCTGC TGTCCGGCCA GCGTGAGGCT GCCCGCCTCA TTGAGATGTA
1550 CCGAGACCTC TTCCAGCAGG GGACCTGAGG GCTGTCCTCG CTGCTGAGAA
1600 GAGCCACTAA CTCGTGACCT CCAGCCTGCC CCTTGCTGCC GTGTGCTCCT
1650 GCCTTCCTGA TCCTCTGTAG AAAGGATTTT TATCTTCTGT AGAGCTAGCC
1700 GCCCTGACTG CCTTCAGACC TGGCCCTGTA GCTTT
```

B

```
           10         20         30         40         50
   0 MQSCESSGDS ADDPLSRGLR RRGQPRVVVI GAGLAGLAAA KALLEQGFTD
  50 VTVLEASSHV GGRVQSVKLG HATFEPGATW IHGSHGNPIY HLAEANGLLE
 100 ETTDGERSVG RISLYSKNGV ACYLTNHGRR IPKDVVEEFS DLYNEVYNLT
 150 QEFFRHDKPV NAESQNSVGV FTREEVRNRI RNDPDDPEAT KRLKLAMIQQ
 200 YLKVESCESS SHSMDEVSLS AFGEWTEIPG AHHIIPSGFM RVVELLAEGI
 250 PAHVIQLGKP VRCIHWDQAS ARPRGPEIEP RGVLKRQYTS FFRPGLPTEK
 300 VAAIHRLGIG TTDKIFLEFE EPFWGPECNS LQFVWEDEAE SHTLTYPPEL
 350 WYRKICGFDV LYPPERYGHV LSGWICGEEA LVMERCDDEA VAEICTEMLR
 400 QFTGNPNIPK PRRILRSAWG SNPYFRGSYS YTQVGSSGAD VEKLAKPLPY
 450 TESSKTAPMQ VLFSGEATHR KYYSTTHGAL LSGQREAARL IEMYRDLFQQ
 500 GT
```

Figure 16 A and B

A

```
          10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAAGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGACCC TCTCAGTCGC GGCCTACGGA GAAGGGGACA GCCTCGTGTG
 150 GTGGTGATCG GCGCCGGCTT GGCTGGCCTG GCTGCAGCCA AAGCACTTCT
 200 TGAGCAGGGT TTCACGGATG TCACTGTGCT TGAGGCTTCC AGCCACGTCG
 250 GAGGCCGTGT GCAGAGTGTG AAACTTGGAC ACGCCACCTT TGAGCTGGGA
 300 GCCACCTGGA TCCATGGCTC CCATGGGAAC CCTATCTATC ATCTAGCAGA
 350 AGCCAACGGC CTCCTGGAAG AGACAACCGA TGGGGAACGC AGCGTGGGCC
 400 GCATCAGCCT CTATTCCAAG AATGGCGTGG CCTGCTACCT TACCAACCAC
 450 GGCCGCAGGA TCCCCAAGGA CGTGGTTGAG GAATTCAGCG ATTTATACAA
 500 CGAGCCCATG CAGGTGCTGT TTTCCGGTGA GGCCACCCAC CGCAAGTACT
 550 ATTCCACCAC CCACGGTGCT CTGCTGTCCG GCCAGCGTGA GGCTGCCCGC
 600 CTCATTGAGA TGTACCGAGA CCTCTTCCAG CAGGGGACCT GAGGGCTGTC
 650 CTCGCTGCTG AGAAGAGCCA CTAACTCGTG ACCTCCAGCC TGCCCCTTGC
 700 TGCCGTGTGC TCCTGCCTTC CTGATCCTCT GTAGAAAGGA TTTTTATCTT
 750 CTGTAGAGCC AGCCGCCCTG ACTGCCTTCA GACCTGGCCC TGTAGCTTT
```

B

```
          10         20         30         40         50
   0 MQSCESSGDS ADDPLSRGLR RRGQPRVVVI GAGLAGLAAA KALLEQGFTD
  50 VTVLEASSHV GGRVQSVKLG HATFELGATW IHGSHGNPIY HLAEANGLLE
 100 ETTDGERSVG RISLYSKNGV ACYLTNHGRR IPKDVVEEFS DLYNEPMQVL
 150 FSGEATHRKY YSTTHGALLS GQREAARLIE MYRDLFQQGT
```

Figure 17 A and B

A

```
          10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAAGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGACCC TCTCAGTCGC GGCCTACGGA GAAGGGGACA GCCTCGTGTG
 150 GTGGTGATCG GCGCCGGCTT GGCTGGCCTG GCTGCAGCCA AAGCACTTCT
 200 TGAGCAGGGT TTCACGGATG TCACTGTGCT TGAGGCTTCC AGCCACATCG
 250 GAGGCCGTGT GCAGAGTGTG AAACTTGGAC ACGCCACCTT TGAGCTGGGA
 300 GCCACCTGGA TCCATGGCTC CCATGGGAAC CCTATCTATC ATCTAGCAGA
 350 AGCCAACGGC CTCCTGGAAG AGACAACCGA TGGGGAACGC AGCGTGGGCC
 400 GCATCAGCCT CTATTCCAAG AATGGCGTGG CCTGCTACCT TACCAACCAC
 450 GGCCGCAGGA TCCCCAAGGA CGTGGTTGAG GAATTCAGCG ATTTATACAA
 500 CGAGGTCTAT AACTTGACCC AGGAGTTCTT CCGGCACGAT AAACCAGTCA
 550 ATGCTGAAAG TCAAAATAGC GTGGGGGTGT TCACCCGAGA GGAGGTGCGT
 600 AACCGCATCA GGAATGACCC TGACGACCCA GAGGCTACCA AGCGCCTGAA
 650 GCTCGCCATG ATCCAGCAGT ACCTGAAGGT GGAGAGCTGT GAGAGCAGCT
 700 CACACAGCAT GGACGAGGTG TCCCTGAGCG CCTTCGGGGA GTGGACCGAG
 750 ATCCCCGGCG CTCACCACAT CATCCCCTCG GGCTTCATGC GGGTTGTGGA
 800 GCTGCTGGCG GAGGGCATCC CTGCCCACGT CATCCAGCTA GGGAAACCTG
 850 TCCGCTGCAT TCACTGGGAC CAGGCCTCAG CCCGCCCCAG AGGCCCTGAG
 900 ATTGAGCCCC GGGGTGTGCT AAAGAGGCAG TACACCAGTT TCTTCCGGCC
 950 AGGCCTGCCC ACAGAGAAGG TGGCTGCCAT CCACCGCCTG GGCATTGGCA
1000 CCACCGACAA GATCTTTCTG GAATTAGAGG AGCCCTTCTG GGGCCCTGAG
1050 TGCAACAGCC TACAGTTTGT GTGGGAGGAC GAAGCGGAGA GCCACACCCT
1100 CACCTACCCA CCTGAGCTCT GGTACCGCAA GATCTGCGGC TTTGATGTCC
1150 TCTACCCGCC TGAGCGCTAC GGCCATGTGC TGAGCGGCTG GATCTGCGGG
1200 GGGGAGGCCC TCGTCATGGA GAAGTGTGAT GACGAGGCAG TGGCCGAGAT
1250 CTGCACGGAG ATGCTGCGTC AGTTCACAGG GAACCCCAAC ATTCCAAAAC
1300 CTCGGCGAAT CTTGCGCTCG GCCTGGGGCA GCAACCCTTA CTTCCGCGGC
1350 TCCTATTCAT ACACGCAGGT GGGCTCCAGC GGGGCGGATG TGGAGAAGCT
1400 GGCCAAGCCC CTGCCGTACA CAGAGAGCTC AAAGACAGCG CATGGAAGCT
1450 CCACAAAGCA GCAGCCTGGT CACCTTTTCT CTTCCAAGTG CCCAGAACAG
1500 CCCCTGGATG CTAACAGGGG CGCCGTAAAG CCCATGCAGG TGCTGTTTTC
1550 CGGTGAGGCC ACCCACCGCA AGTACTATTC CACCACCCAC GGTGCTCTGC
1600 TGTCCGGCCA GCGTGAGGCT GCCCGCCTCA TTGAGATGTA CCGAGACCTC
1650 TTCCAGCAGG GGACCTGAGG GCTGTCCTCG CTGCTGAGAA GAGCCACTAA
1700 CTCGTGACCT CCAGCCTGCC CCTTGCTGCC GTGTGCTCCT GCCTTCCTGA
1750 TCCTCTGTAG AAAGGATTTT TATCTTCTGT AGAGCTAGCC GCCCTGACTG
1800 CCTTCAGACC TGGCCCTGTA GCTTT
```

B

```
          10         20         30         40         50
   0 MQSCESSGDS ADDPLSRGLR RRGQPRVVVI GAGLAGLAAA KALLEQGFTD
  50 VTVLEASSHI GGRVQSVKLG HATFELGATW IHGSHGNPIY HLAEANGLLE
 100 ETTDGERSVG RISLYSKNGV ACYLTNHGRR IPKDVVEEFS DLYNEVYNLT
 150 QEFFRHDKPV NAESQNSVGV FTREEVRNRI RNDPDDPEAT KRLKLAMIQQ
 200 YLKVESCESS SHSMDEVSLS AFGEWTEIPG AHHIIPSGFM RVVELLAEGI
 250 PAHVIQLGKP VRCIHWDQAS ARPRGPEIEP RGVLKRQYTS FFRPGLPTEK
 300 VAAIHRLGIG TTDKIFLELE EPFWGPECNS LQFVWEDEAE SHTLTYPPEL
 350 WYRKICGFDV LYPPERYGHV LSGWICGGEA LVMEKCDDEA VAEICTEMLR
 400 QFTGNPNIPK PRRILRSAWG SNPYFRGSYS YTQVGSSGAD VEKLAKPLPY
 450 TESSKTAHGS STKQQPGHLF SSKCPEQPLD ANRGAVKPMQ VLFSGEATHR
 500 KYYSTTHGAL LSGQREAARL IEMYRDLFQQ GT!
```

Figure 18 A and B

A

```
          10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAAGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGACCC TCTCAGTCGC GGCCTACGGA GAAGGGGACA GCCTCGTGTG
 150 GTGGTGATCG GCGCCGGCTT GGCTGGCCTG GCTGCAGCCA AAGCACTTCT
 200 TGAGCAGGGT TTCACGGATG TCACTGTGCT TGAGGCTTCC AGCCACGTCG
 250 GAGGCCGTGT GCAGAGTGTG AAACTTGGAC ACGCCACCTT TGAGCTGGGA
 300 GCCACCTGGA TCCATGGCTC CCATGGGAAC CCTATCTATC ATCTAGCAGA
 350 AGCCAACGGC CTCCTGGAAG AGACAACCGA TGGGGAACGC AGCGTGGGCC
 400 GCATCAGCCT CTATTCCAAG AATGGCGTGG CCTGCTACCT TACCAACCAC
 450 GGCCGCAGGA TCCCCAAGGA CGTGGTTGAG GAATTCAGCG ATTTATACAA
 500 CGAGGTCTAT AACTTGACCC AGGAGTTCTT CCGGCACGAT AAACCAGTCA
 550 ATGCTGAAAG TCAAAATAGC GTGGGGGTGT TCACCCGAGA GGAGGTGCGT
 600 AACCGCATCA GGAATGACCC TGACGACCCA GAGGCTACCA AGCGCCTGAA
 650 GCTCGCCATG ATCCAGCAGT ACCTGAAGGT GGAGAGCTGT GAGAGCAGCT
 700 CACACAGCAT GGACGAGGTG TCCCTGAGCG CCTTCGGGGA GTGGACCGAG
 750 ATCCCCGGCG CTCACCACAT CATCCCCTCG GGCTTCATGC GGGTTGCGGA
 800 GCTGCTGGCG GAGGGCATCC CTGCCCACGT CATCCAGCTA GGGAAACCTG
 850 TCCGCTGCAT TCACTGGGAC CAGGCCTCAG CCCGCCCCAG AGGCCCTGAG
 900 ATTGAGCCCC GGGGTGAGGG CGACCACAAT CACGACACCG GGGAGGGTGG
 950 CCAGGGTGGA GAGGAGCCCC TAGCTGCCGT GTGCTCCTGC CTTCCTGATC
1000 CTCTGTAGAA AGGATTTTTA TCTTCTGTAG AGCTAGCCGC CCTGACTGCC
1050 TTCAGACCTG GCCCTGTAGC TTT
```

B

```
          10         20         30         40         50
   0 MQSCESSGDS ADDPLSRGLR RRGQPRVVVI GAGLAGLAAA KALLEQGFTD
  50 VTVLEASSHV GGRVQSVKLG HATFELGATW IHGSHGNPIY HLAEANGLLE
 100 ETTDGERSVG RISLYSKNGV ACYLTNHGRR IPKDVVEEFS DLYNEVYNLT
 150 QEFFRHDKPV NAESQNSVGV FTREEVRNRI RNDPDDPEAT KRLKLAMIQQ
 200 YLKVESCESS SHSMDEVSLS AFGEWTEIPG AHHIIPSGFM RVAELLAEGI
 250 PAHVIQLGKP VRCIHWDQAS ARPRGPEIEP RGEGDHNHDT GEGGQGGEEP
 300 LAAVCSCLPD PL
```

Figure 19 A and B

A

```
          10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAAGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGACCC TCTCAGTCGC GGCCTACGGA GAAGGGGACA GCCTCGTGTG
 150 GTGGTGATCG GCGCCGGCTT GGCTGGCCTG GCTGCAGCCA AAGCACTTCT
 200 TGAGCAGGGT TTCACGGATG TCACTGTGCT TGAGGCTTCC AGCCACGTCG
 250 GAGGCCGTGT GCAGAGTGTG AAACTTGGAC ACGCCACCTT TGAGCTGGGA
 300 GCCACCTGGA TCCATGGCTC CCATGGGAAC CCTATCTATC ATCTAGCAGA
 350 AGCCAACGGC CTCCTGGAAG AGACAACCGA TGGGGAACGC AGCGTGGGCC
 400 GCATCAGCCT CTATTCCAAG AATGGCGTGG CCTGCTACCT TACCAACCAC
 450 GGCCGCAGGA TCCCCAAGGA CGTGGTTGAG GAATTCAGCG ATTTATACAA
 500 CGAGGTCTAT AACTTGACCC AGGAGTTCTT CCGGCACGAT AAACCAGTCA
 550 ATGCTGAAAG TCAAAATAGC GTGGGGGTGT TCACCCGAGA GGAGGTGCGT
 600 AACCGCATCA GGAATGACCC TGACGACCCA GAGGCCACCA AGCGCCTGAA
 650 GCTCGCCATG ATCCAGCAGT ACCTGAAGGT GGAGAGCTGT GAGAGCAGCT
 700 CACACAGCAT GGACGAGGTG TCCCTGAGCG CCTTCGGGGA GTGGACCGAG
 750 ATCCCCGGCG CTCACCACAT CATCCCCTCG GGCTTCATGC GGGTTGTGGA
 800 GCTGCTGGCG GAGGGCATCC CTGCCCACGT CATCCAGCTA GGGAAACCTG
 850 TCCGCTGCAT TCACTGGGAC CAGGCCTCAG CCCGCCCCAG AGGCCCTGAG
 900 ATTGAGCCCC GGGGTGAGGG CGACCACAAT CACGACACTG GGGAGGGTGG
 950 CCAGGGTGGT GAGGCTGCCC GCCTCATTGA GATGTACCGA GACCTCTTCC
1000 AGCAGGGGAC CTGAGGGCTG TCCTCGCTGC TGAGAAGAGC CACTAACTCG
1050 TGACCTCCAG CCTGCCCCTT GCTGCCGTGT GCTCCTGCCT TCCTGATCCT
1100 CTGTAGAAAG GATTTTTATC TTCTGTAGAG CTAGCCGCCC TGACTGCCTT
1150 CAGACCTGGC CCTGTAGCTT T
```

B

```
          10         20         30         40         50
   0 MQSCESSGDS ADDPLSRGLR RRGQPRVVVI GAGLAGLAAA KALLEQGFTD
  50 VTVLEASSHV GGRVQSVKLG HATFELGATW IHGSHGNPIY HLAEANGLLE
 100 ETTDGERSVG RISLYSKNGV ACYLTNHGRR IPKDVVEEFS DLYNEVYNLT
 150 QEFFRHDKPV NAESQNSVGV FTREEVRNRI RNDPDDPEAT KRLKLAMIQQ
 200 YLKVESCESS SHSMDEVSLS AFGEWTEIPG AHHIIPSGFM RVVELLAEGI
 250 PAHVIQLGKP VRCIHWDQAS ARPRGPEIEP RGEGDHNHDT GEGGQGGEAA
 300 RLIEMYRDLF QQGT
```

Figure 20 A and B

A

```
          10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAAGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGACCC TCTCAGTCGC GGCCTACGGA GAAGGGGACA GCCTCGTGTG
 150 GTGGTGATCG GCGCCGGCTT GGCTGGCCTG GCTGCCATCC ACCGCCTGGG
 200 CATTGGCACC ACCGACAAGA TCTTTCTGGA ATTCGAGGAG CCCTTCTGGG
 250 GCCCTGAGTG CAACAGCCTA CAGTTTGTGT GGGAGGACGA AGCGGAGAGC
 300 CACACCCTCA CCTACCCACC TGAGCTCTGG TACCGCAAGA TCTGCGGCTT
 350 TGATGTCCTC TACCCGCCTG AGCGCTACGG CCATGTGCTG AGCGGCTGGA
 400 TCTGCGGGGA GGAGGCCCTC GTCATGGAGA AGTGTGATGA CGAGGCAGTG
 450 GCCGAGATCT GCACGGAGAT GCTGCGTCAG TTCACAGGGA ACCCCAACAT
 500 TCCAAAACCT CGGCGAATCT TGCGCTCGGC CTGGGGCAGC AACCCTTACT
 550 TCCGCGGCTC CTATTCATAC ACGCAGGTGG GCTCCAGCGG GGCGGATGTG
 600 GAGAAGCTGG CCAAGCCCCT GCCGTACACA GAGAGCTCAA AGACAGCGCC
 650 CATGCGGGTG CTGTTTTCCG GTGAGGCCAC CCACCGCAAG TACTATTCCA
 700 CCACCCACGG TGCTCTGCTG TCCGGCCAGC GTGAGGCTGC CCGCCTCATT
 750 GAGATGTACC GAGACCTCTT CCAGCAGGGG ACCTGAGGGC TGTCCTCGCT
 800 GCTGAGAAGA GCCACTAACT CGTGACCTCC AGCCTGCCCC TTGCTGCCGT
 850 GTGCTCCTGC CTTCCTGATC CTCTGTAGAA AGGATTTTTA TCTTCTGTAG
 900 AGCCAGCCGC CCTGACTGCC TTCAGACCTG GCCCTGTAGC TTT
```

B

```
          10         20         30         40         50
   0 MQSCESSGDS ADDPLSRGLR RRGQPRVVVI GAGLAGLAAI HRLGIGTTDK
  50 IFLEFEEPFW GPECNSLQFV WEDEAESHTL TYPPELWYRK ICGFDVLYPP
 100 ERYGHVLSGW ICGEEALVME KCDDEAVAEI CTEMLRQFTG NPNIPKPRRI
 150 LRSAWGSNPY FRGSYSYTQV GSSGADVEKL AKPLPYTESS KTAPMRVLFS
 200 GEATHRKYYS TTHGALLSGQ REAARLIEMY RDLFQQGT
```

Figure 21 A and B

A

```
          10         20         30         40         50
   0 CGCCGCTCGC CGCAGACTTA CTTCCCCGGC TCAGCAGGGA AAGGTTCCTA
  50 GAGGGTGAGC GCGGACGGTA TGCAAAGTTG TGAATCCAGT GGTGACAGTG
 100 CGGATGTGGA GAAGCTGGCC AAGCCCCTGC CGTACACGGA GAGCTCAAAG
 150 ACAGCGCCCA TGCAGGTGCT GTTTTCCGGT GAGGCCACCC ACCGCAAGTA
 200 CTATTCCACC ACCCACGGTG CTCTGCTGTC CGGCCAGCGT GAGGCTGCCC
 250 GCCTCATTGA GATGTACCGA GACCTCTTCC AGCAGGGGAC CTGAGGGCTG
 300 TCCTCGCTGC TGAGAAGAGC CACTAACTCG TGACCTCCAG CCTGCCCCTT
 350 GCTGCCGTGT GCTCCTGCCT TCCTGATCCT CTGTAGAAAG GATTTTTATC
 400 TTCTGTAGAG CTAGCCGCCC TGACTGCCTT CAGACCTGGC CCTGTAGCTT
 450 T
```

B

```
          10         20         30         40         50
   0 MQSCESSGDS ADVEKLAKPL PYTESSKTAP MQVLFSGEAT HRKYYSTTHG
  50 ALLSGQREAA RLIEMYRDLF QQGT!
```

Figure 22

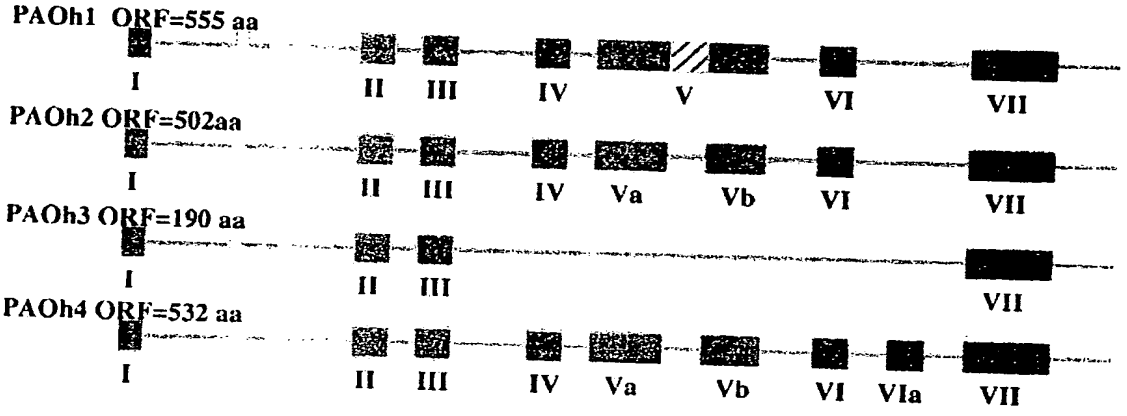
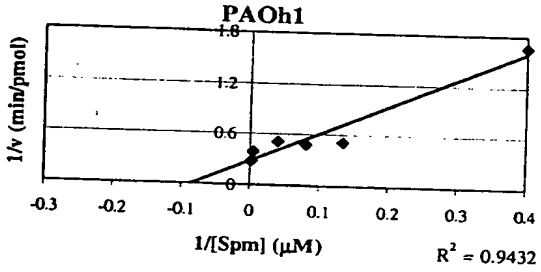

PAOh1 ORF=555 aa
I
II
III
IV
V
VI
VII
PAOh2 ORF=502aa
I
II
III
IV
Va
Vb
VI
VII
PAOh3 ORF=190 aa
I
II
III
VII
PAOh4 ORF=532 aa
I
II
III
IV
Va
Vb
VI
VIa
VII

Figure 23A and B.

A

	PAOh1		PAOh2		PAOh3		PAOh4	
Substrate	V_{MAX} *(pmol/min)*	K_M *(μM)*	V_{MAX} *(pmol/min)*	K_M *(μM)*	V_{MAX} *(pmol/min)*	K_M *(μM)*	V_{MAX} *(pmol/min)*	K_M *(μM)*
Spm	3.3 +/- 0.4	5.9 +/- 0.1	3.0 +/- 1.7	7.0 +/- 4.2	8.6 +/- 0.2	6.9 +/-4.8	3.4 +/- 1.1	0.029 +/- 0.020
Spd	4.0 +/- 0.0	12.8 +/- 3.1	2.1 +/- 0.9	10.4 +/- 2.9	14.4 +/- 1.5	6.7 +/- 0.4	2.2 +/- 0.1	0.014 +/- 0.006
N^1AcSpm	4.1 +/- 0.1	23.2 +/- 2.6	2.0 +/- 0.1	15.8 +/- 0.4	21.7 +/- 2.1	11.5 +/- 3.7	6.1 +/- 2.4	0.025 +/- 0.012

B



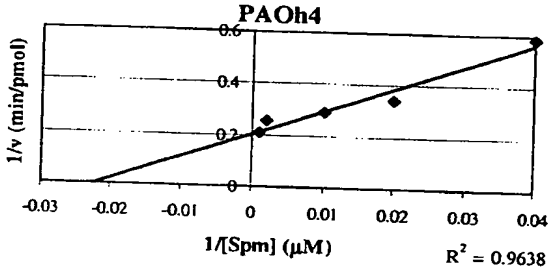


Figure 24

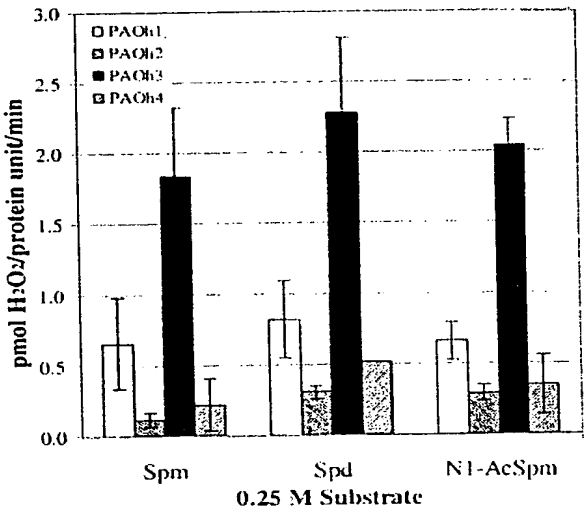

PAOh1
PAOh2
PAOh3
PAOh4
pmol H2O2/protein unit/min
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Spm
Spd
N1-AcSpm
0.25 M Substrate

Figure 25

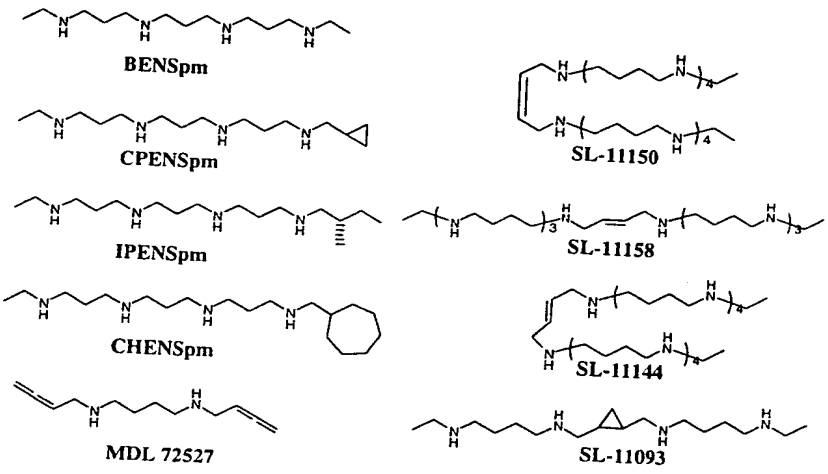

BENSpm
CPENSpm
IPENSpm
CHENSpm
MDL 72527
SL-11150
SL-11158
SL-11144
SL-11093

Figure 26

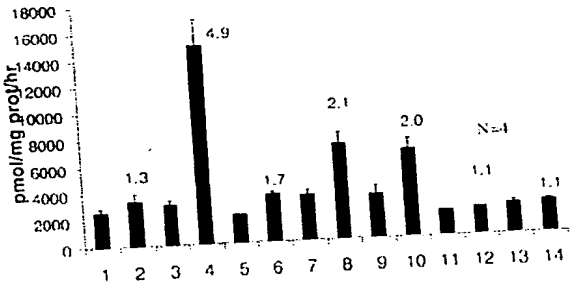

pmol/mg prot/hr
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1.3
4.9
1.7
2.1
2.0
N=4
1.1
1.1
1 2 3 4 5 6 7 8 9 10 11 12 13 14

Figure 27

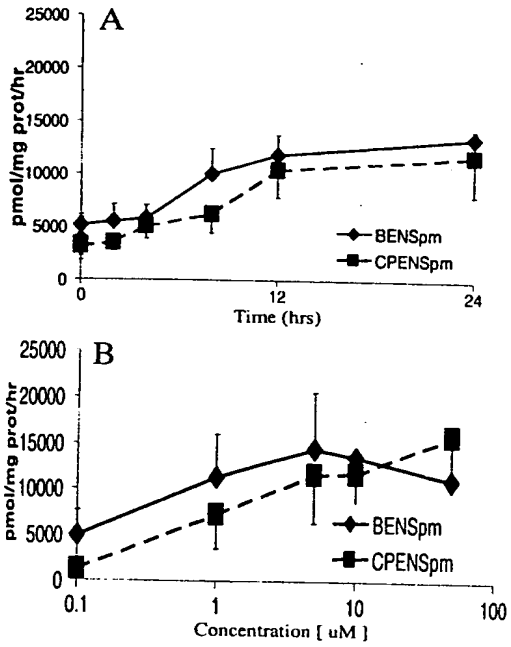

A
25000
20000
15000
10000
5000
0
pmol/mg prot/hr
0
12
24
Time (hrs)
BENSpm
CPENSpm
B
25000
20000
15000
10000
5000
0
pmol/mg prot/hr
0.1
1
10
100
Concentration [uM]
BENSpm
CPENSpm

Figure 2f

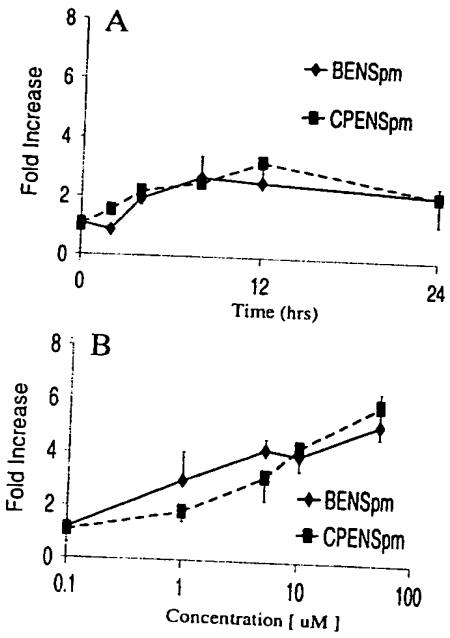

A
Fold Increase
8
6
4
2
0
BENSpm
CPENSpm
0
12
24
Time (hrs)
B
Fold Increase
8
6
4
2
0
BENSpm
CPENSpm
0.1
1
10
100
Concentration [uM]

Figure 29

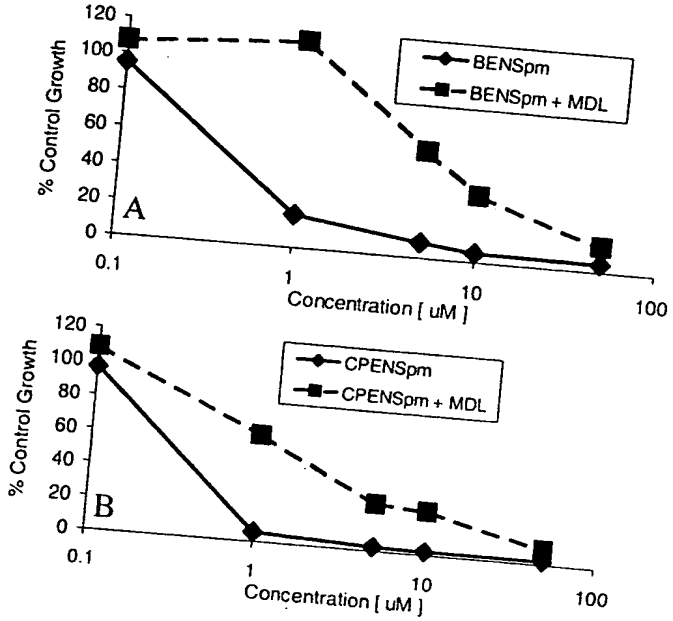

120
100
80
60
40
20
0
% Control Growth
A
BENSpm
BENSpm + MDL
0.1
1
10
100
Concentration [uM]
120
100
80
60
40
20
0
% Control Growth
B
CPENSpm
CPENSpm + MDL
0.1
1
10
100
Concentration [uM]

Figure 30

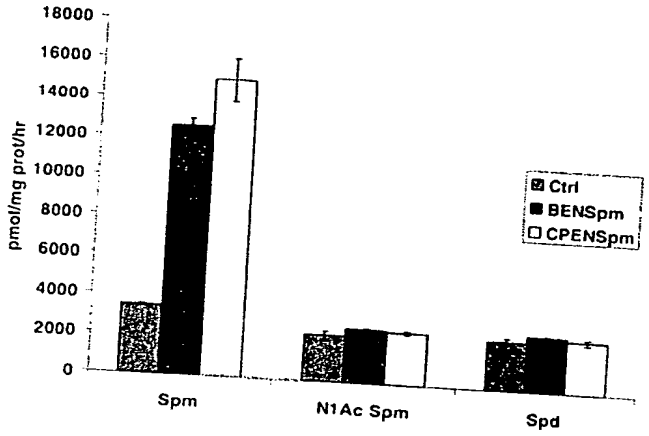

18000
16000
14000
12000
10000
8000
6000
4000
2000
0
pmol/mg prot/hr
Ctrl
BENSpm
CPENSpm
Spm
N1Ac Spm
Spd

Figure 31

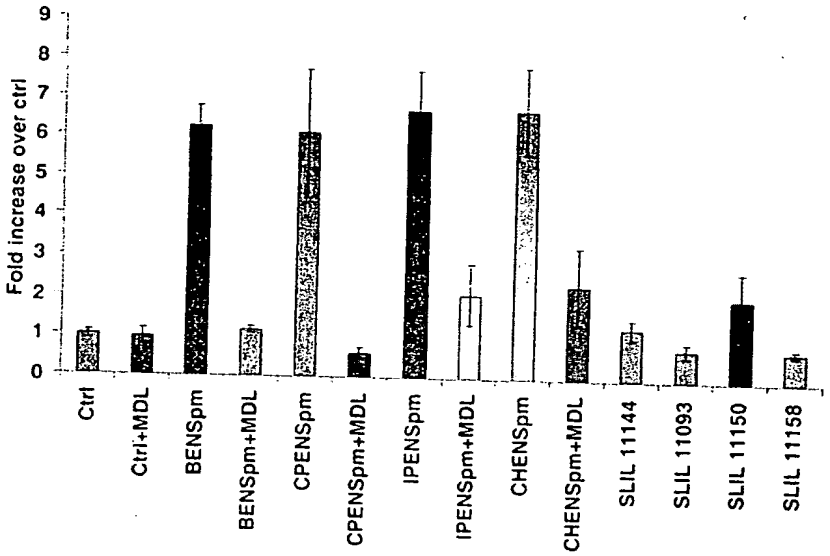
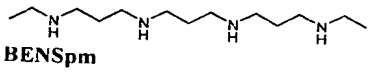
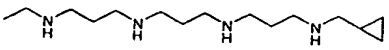

Fold increase over ctrl
0
1
2
3
4
5
6
7
8
9
Ctrl
Ctrl+MDL
BENSpm
BENSpm+MDL
CPENSpm
CPENSpm+MDL
IPENSpm
IPENSpm+MDL
CHENSpm
CHENSpm+MDL
SLIL 11144
SLIL 11093
SLIL 11150
SLIL 11158

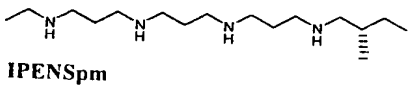
Figure 32



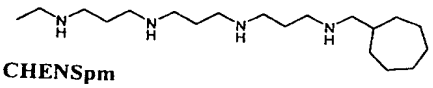
BENSpm



CPENSpm

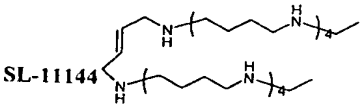


IPENSpm

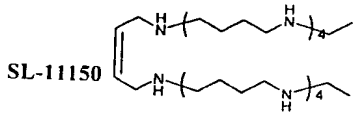


CHENSpm

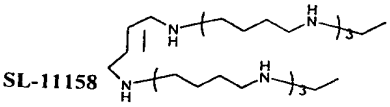
SL-11093



SL-11144



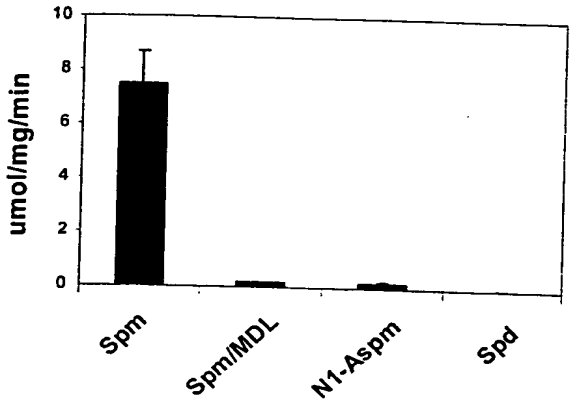
SL-11150



SL-11158

Figure 33

A


umol/mg/min
10
8
6
4
2
0
Spm
Spm/MDL
N1-Aspm
Spd

B

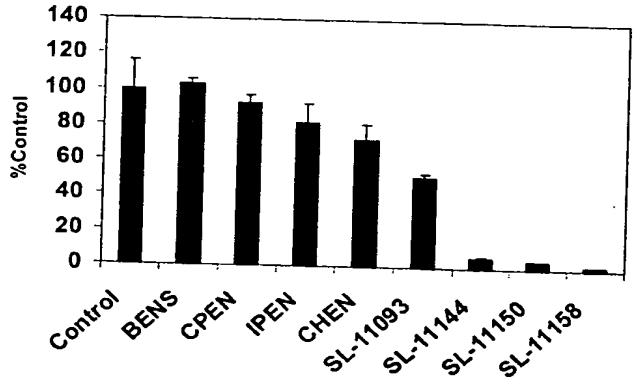

%Control
140
120
100
80
60
40
20
0
Control
BENS
CPEN
IPEN
CHEN
SL-11093
SL-11144
SL-11150
SL-11158

Figure 34

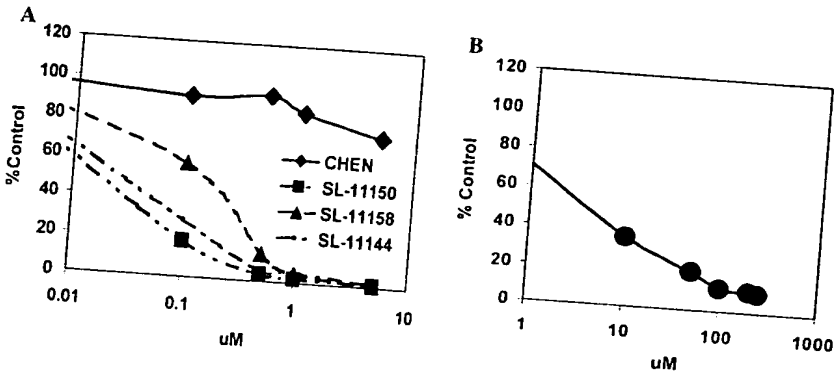
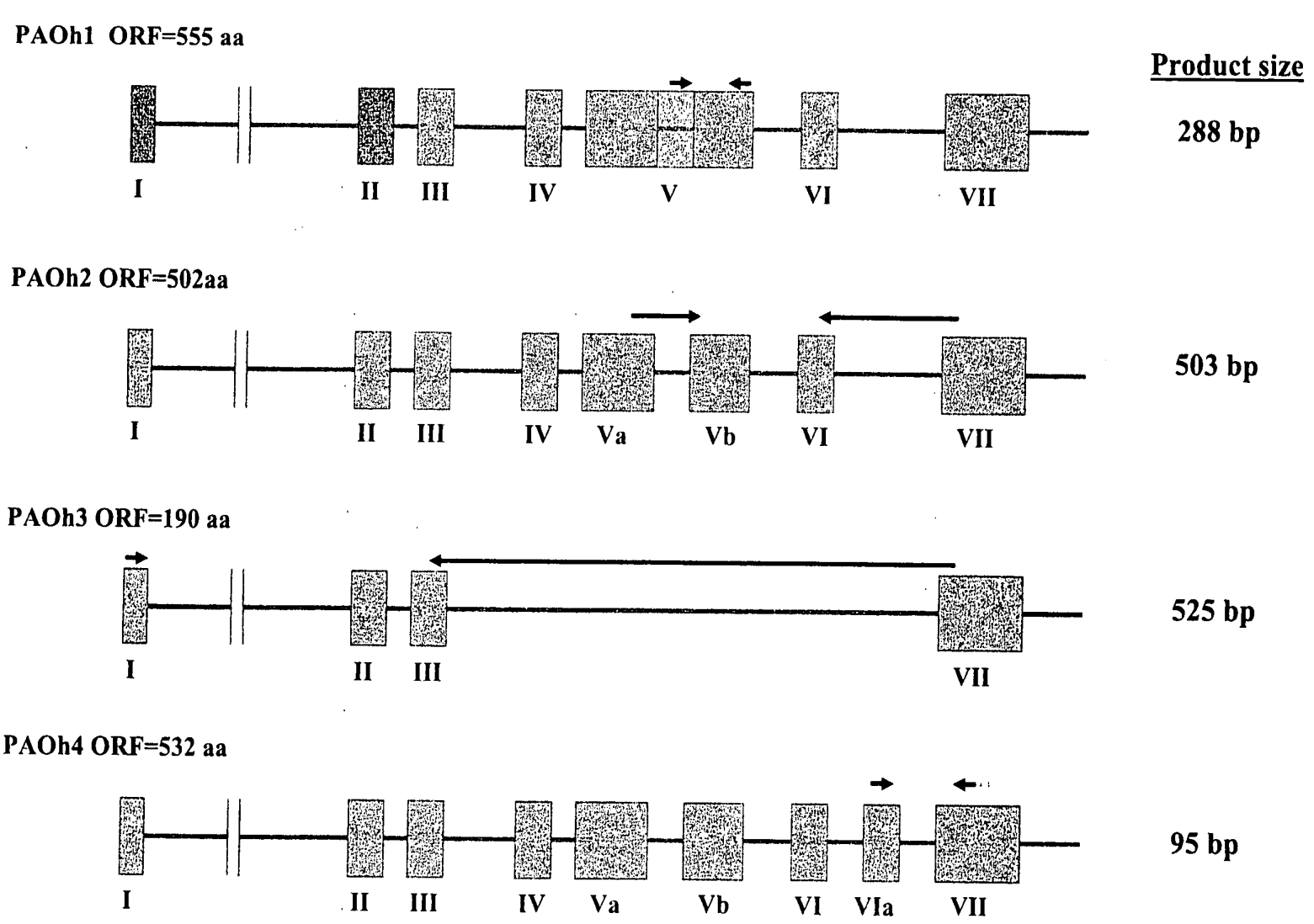

A
120
100
80
60
40
20
0
% Control
0.01
0.1
1
10
uM
CHEN
SL-11150
SL-11158
SL-11144
B
120
100
80
60
40
20
0
% Control
1
10
100
1000
uM

Figure 35


PAOh1 ORF=555 aa
Product size
I
II
III
IV
V
VI
VII
288 bp
PAOh2 ORF=502aa
I
II
III
IV
Va
Vb
VI
VII
503 bp
PAOh3 ORF=190 aa
I
II
III
VII
525 bp
PAOh4 ORF=532 aa
I
II
III
IV
Va
Vb
VI
VIa
VII
95 bp